

Title: **Spatial management of small-scale fisheries targeting metapopulations with source-sink configuration: a parsimonious ecosystem approach.**

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Abstract: This paper focuses on the consequences of managing small-scale fisheries without consideration of geographical differentiation in reproductive potential through a species range. Because fishing costs increase with distance, the alternative port locations are predicted to have substantially different impacts on biological and economic performance variables when there are no spatial management measures in place. A dynamic spatial model with age-structure and bioeconomic components is used to explore the potential effects of fishing port location on metapopulations with a source-sink structure. Recruits are allocated to unit areas in the geographic array according to a negative binomial distribution. Management of this type of small-scale fishery using marine protected areas (MPA) with or without considering the location of source and sink components is also addressed. The move towards an ecosystem approach (EAF) in small-scale fisheries targeting a metapopulation, should be on an incremental, parsimonious and adaptive management basis in view of: (i) the time needed to learn the principles of the EAF approach and acquire knowledge and information on the specific ecosystem, and (ii) the need to carefully assess the distributional implications of EAF interventions between coastal states fishing in either the source or sink areas. This involves more extensive coverage of capacity building in the countries involved in applying the ecosystems approach. Understanding of EAF in the context co-management and community-based management seems to be a priority for small-scale fisheries.